

CLAIMS

What is claimed is:

1. A piston assembly, comprising:
a piston having a wrist pin bore;
a connecting rod having a wrist pin bore; and
a wrist pin receivable in said bores to connect said piston to said connecting rod, said wrist pin having an outer surface roughness no greater than $10\mu\text{m}$, a Kurtosis value that is inversely proportional to said surface roughness such that the product of said Kurtosis value and said surface roughness is between about $0.3\mu\text{m}$ to $60\mu\text{m}$, a skewness of about -1.0 to 0.0 , and a lay angle relative to an axis of said wrist pin of 85 to 95 degrees.
2. The piston assembly of claim 1, wherein said wrist pin bores are bushingless and covered by a low friction coating.
3. The piston assembly of claim 2, wherein said low friction coating comprises manganese phosphate.
4. The piston assembly of claim 1, wherein said piston includes a piston body formed with said wrist pin bore and a piston skirt formed as one piece with said piston body of the same material.
5. A wrist pin for joining a connecting rod to a piston, said wrist pin comprising:
a generally cylindrical wrist pin body having a central longitudinal axis and an outer surface; and
wherein said outer surface is characterized by having an outer surface roughness of no greater than $10\mu\text{m}$, a Kurtosis value that is inversely proportional to the surface roughness such that the product of the Kurtosis value and the surface

roughness is between 0.3 μm and 60 μm , a skewness of about -1.0 to 0.0 and a lay angle relative to the axis of rotation of about 85 to 95 degrees.